

1. Apparatus for fluid application to a plurality of substrates having surface patterns with prominent sidewalls comprising:

an open tank for holding a liquid chemical;

means to hold a plurality of substrates;

gas supply means;

a gas distribution plate means submerged and supported by bottom of said tank, said gas distribution plate generates and directs gas bubbles thereunder parallel to surfaces of substrates submerged thereabove.

2. Apparatus for fluid application to a plurality of semiconductor wafers having top metal lines with prominent sidewalls comprising:

an open tank for holding a liquid chemical;

means to hold a plurality of wafers;

gas supply means;

a gas distribution plate means submerged and supported by bottom of said tank, said gas distribution plate generates and directs gas bubbles thereunder parallel to surfaces of said wafers submerged thereabove.

3. The apparatus of claim 2 wherein said means to hold a plurality of wafers is a cassette having appropriate openings therein so that a liquid chemical may reach said plurality of wafers when said cassette is submerged.

4. Apparatus for stripping photoresist from a plurality of semiconductor wafers having top metal lines with prominent sidewalls comprising:

an open tank for holding a liquid stripper;

means to hold a plurality of wafers;

gas supply means;

a gas distribution plate means submerged and supported by bottom of
said tank, said gas distribution plate generates and directs gas bubbles
thereunder directed parallel to surfaces of said wafers submerged
thereabove.

5. The apparatus of claim 1 wherein said gas distribution plate includes:
a rectangular plate having a top surface separated from a bottom surface;
a sinuous groove disposed on said bottom surface forming a plurality of
straight and parallel segments with alternate turnarounds, said segments
transversing length of said plate;
sinuous groove having two inlets, a first inlet beginning proximal one
end of a long side edge of said plate, the other inlet exiting the same side
edge proximal the other end, and
a length of flexible tubing, having two ends, urged and guided into said
sinuous groove, said ends extending therefrom connected to said gas
source;
a multiplicity of spacer legs of equal lengths affixed to bottom surface of
said plate.

6. The apparatus of claim 5 wherein said spacer legs raise said plate from
bottom of said tank to facilitate tank cleaning and maintenance.

7. The apparatus of claim 1 wherein said top surface of said gas
distribution plate further includes:

a plurality of elongated slot openings extending from the top surface to
the bottom surface contiguously disposed between said parallel
segments, said slot openings transversing length of said plate;

55 two rows of a first set of holes, each row widely separated therebetween,
said holes equally spaced and forming pairs transversing length of
plate, said hole aligned and intersecting with the center width of
respective segments of said sinuous groove thereunder, and
two rows of a second set of holes drilled through a top wall of said tubing,
60 whereby location of said holes are guided therein by first set of holes.

8. The apparatus of claim 7 wherein said plurality of slot openings
facilitate tank cleaning and maintenance.

65 9. The apparatus of claim 1 wherein said GDP is made of a corrosion
resistant material.

10. The apparatus of claim 1 wherein said flexible tube is of a corrosion
resistant material.

70 11. A method for removing organic materials from a plurality of
substrates having surface patterns with prominent sidewalls comprising the steps
of:

providing an open tank containing a liquid chemical;

75 providing a gas distribution plate means submerged and supported by
bottom of said tank;

providing a gas supply means connected to said gas distribution plate:

providing carrier means containing a plurality of substrates, and

submerging and resting carrier means thereon gas distribution plate so

80 that substrates are totally submersed and supported vertically;

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said gas distribution plate generates and directs gas bubbles thereunder and parallel to surfaces of substrates positioned thereabove.

85 12. A method for removing organic materials from a plurality of semiconductor wafers having top metal lines with prominent sidewalls comprising the steps:

providing an open tank containing a liquid chemical;

providing a gas distribution plate means submerged and supported by bottom of said tank;

90 providing a gas supply means connected to said gas distribution plate:

providing cassette means containing a plurality of wafers, and

submerging and resting cassette means thereon gas distribution plate so that wafers are totally submersed and supported vertically;

95 said gas distribution plate generates and directs gas bubbles thereunder and parallel to surfaces of wafers positioned thereabove.

100 13. The method of claim 12 wherein said means to hold a plurality of wafers is a cassette having appropriate openings therein so that a liquid chemical may reach said plurality of wafers when said cassette is submerged.

14. A method for stripping photoresist from a plurality of semiconductor wafers having top metal lines with prominent sidewalls, comprising the steps of:

providing an open tank containing a liquid stripper;

105 providing a gas distribution plate means submerged and supported by bottom of said tank;

providing a gas supply means connected to said gas distribution plate;

providing cassette means containing a plurality of wafers, and

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submerging and resting cassette means thereon gas distribution plate so that wafers are totally submersed and supported vertically; said gas distribution plate generates and directs gas bubbles thereunder and parallel to surfaces of wafers positioned thereabove.

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15. The method of claim 11 wherein said gas distribution plate is made of a corrosion resistant material.

16. The method of claim 11 wherein said flexible tube is of a corrosion resistant material.

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17. The method of claim 11 wherein said gas supply is a pressurized and regulated nitrogen gas.

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